

CLAIMS

1. A device for feeding packages from a packaging machine, characterised by a first, a second, a third and a fourth package driver (2-5) for transporting packages (6) in a transportation direction (T) from an infeed station (7) of the device (1) arranged to receive packages (6) from said packaging machine to an outfeed station (8) of the device (1), said drivers (2-5) being arranged in pairs, so that the first and third drivers (2, 4) and the second and fourth drivers (3, 5) respectively are arranged diametrically in relation to each other about a common centre axis (C), said drivers (2-5) being rotatable about the centre axis (C).

2. A device as claimed in claim 1, wherein one driver (2-5) in one pair is arranged to engage the packages from behind in the transportation direction and one driver (2-5) in the other pair is arranged to engage the packages (6) from the front in the transportation direction (T).

3. A device as claimed in claim 2, wherein the drivers (2-5) are arranged to rotate alternately in a first and second direction (T, R) about the centre axis (C), the transportation direction (T) being in the first direction.

4. A device as claimed in claim 3, wherein the pair comprising the first and third drivers (2, 4) and the pair comprising the second and fourth drivers (3, 5), respectively, after each transportation of packages (6) to the outfeed station (8) are arranged to rotate in opposite directions (T, R).

5. A device as claimed in claim 3 or 4, wherein the first and third drivers (2, 4) are arranged to rotate in the first direction (T) after every second transportation of packages (6) to the outfeed station (8) and to rotate in the second direction (R) after every second transportation of packages (6) to the outfeed station (8).

6. A device as claimed in any one of claims 3-5, wherein the driver (2-5) which engages the packages (6) from behind, after transportation of the packages (6) to the outfeed station (8) is arranged to rotate in the
5 second direction (R) to enable engagement with subsequent packages (6) at the infeed station (7) from the front, and wherein the driver (2-5) which engages the packages (6) from the front, after transportation of the packages (6) to the outfeed station (8) is arranged to rotate in
10 the first direction (T) to enable engagement of the other driver (2-5) in the same pair with the subsequent packages (6) at the infeed station (7) from behind.

7. A device as claimed in any one of the preceding claims, wherein the drivers (2-5) are arranged to transfer the packages (6) to a conveyor belt (23) at the out-
15 feed station (8), the conveyor belt (23) moving at a conveyor belt speed, the drivers (2-5) being arranged to deliver the packages (6) at a speed essentially equal to the conveyor belt speed.

20 8. A device as claimed in any one of the preceding claims, further comprising turning means (14) for moving and turning packages (6) leaving the packaging machine upside down, placing the packages (6) turned the right way round at the infeed station (7) of the device (1).

25 9. A device as claimed in any one of the preceding claims, wherein the transportation of the packages (6) occurs along part of a circle having a radius essentially equal to the radius of curvature of the rotation of the drivers (2-5).

30 10. A device as claimed in claim 9, wherein the radius of curvature of the rotation of the drivers (2-5) is essentially equal to a radius of curvature of a path of movement of packages (6) leaving the packaging machine.

35 11. A device as claimed in any one of the preceding claims, wherein the drivers (2-5) are arranged to trans-

port one package at a time from the infeed station (7) to the outfeed station (8).

12. A device as claimed in any one of claims 1-10, wherein the drivers (2-5) are arranged to transport two
5 or more packages (6) at a time from the infeed station (7) to the outfeed station (8).

13. A device as claimed in claim 12, wherein the drivers (2-5) are arranged to push together said two or more packages (6) leaving the packaging machine with a
10 distance between them, by means of rotating the drivers (2-5) engaging the packages (6) at the infeed station (7) relatively towards each other before transporting the packages (6) to the outfeed station (8).

14. A method of feeding packages (8) from a
15 packaging machine, characterised by the steps of:

receiving at an infeed station (7) adjacent to the packaging machine a first set of at least one package (6) between a first and a second package driver (2, 4), the
20 first driver (2) being arranged in a pair with a third driver (4) and the second driver (3) being arranged in a pair with a fourth driver (5), the first and third drivers (2, 4) and the second and fourth drivers (3, 5) respectively being arranged diametrically in relation to
25 each other around a common centre axis (C), said drivers (2-5) being rotatable about the centre axis (C),

transporting said at least one package (6) by means of rotation of the drivers (2-5) in a transportation direction (T) about the centre axis to an outfeed station
30 (8), the first driver (2) moving behind and the second driver (3) moving in front of said at least one package (6), and

when said at least one package (6) has reached the outfeed station (8), returning the first driver (2) to
35 the infeed station (7) and advancing the second driver (3) by rotation about the centre axis (C) so that the fourth driver (5) advances to the infeed station (7), the

first and fourth drivers (2, 5) being ready to receive a second set of at least one package (6).

15. A method as claimed in claim 14, wherein the packages (6) are transferred to a conveyor belt (23) at the outfeed station (8), the conveyor belt (23) moving at a conveyor belt speed, the packages (6) being transported from the infeed station (7) to the outfeed station (8) at a speed essentially equal to the conveyor belt speed.

16. A method as claimed in claim 14 or 15, wherein the packages (6) are picked upside down from the packaging machine and turned and placed the right way round at the infeed station (7).

17. A method as claimed in any one of claims 14-16, wherein one package (6) at a time is fed from the packaging machine.

18. A method as claimed in any one of claims 14-16, wherein two or more packages (6) at a time are fed from the packaging machine.

19. A method as claimed in claim 18, wherein said two or more packages (6) are received at the infeed station (7) at a distance from each other,

pushed together by means of rotating the drivers (2-5) receiving the packages (6) relatively towards each other, and

25 transported to the outfeed station (8) in abutment with each other.